or to conceal the laws which they should reveal. In social science and political economy, statistics may be considered the collection of experiments, by the results of which we observe the hidden workings of the laws which regulate the social condition of man and his progress in civilisation. The growth and decay of population, the freedom of capital, and the rights of labour, the duty of voluntary or enforced education, the extent of Government interference in labour or manufactures, the competition of prices, the true principles of commerce, the most effectual means of suppression or prevention of crime, the theory of taxation and national loans, and multitudes of similar questions are all governed by subtle laws affecting the free will of man, checked and kept in place by similar action in others, of which we catch a glimpse sometimes by their irregular action in enforced or abnormal conditions, and sometimes by our having discovered and acted in harmony with the natural law which governs them. But as society is perpetually changing what we have discovered and thought to be truth, seems frequently inadequate to account for the new phenomena presented. It is only by extending our observations from the narrow sphere of a single country or a single class to all countries and all classes, by an uniform collection of statistics as is now being done by all the Governments of Europe, by noting differences as well as analogies, and confessing and correcting errors, and comparing the operations of the same causes under various conditions of interference, that we shall throw light on the many unsolved problems of social and political economy which modern civilisation presents.

Government Life Annuities.

THE following information has been extracted from returns presented to the House of Commons shortly after the commencement of each session, and from the "Finance Accounts" published annually soon after the 31st March.

The greater portion of the annuities is granted under the act 10 Geo. 4, c. 24, the provisions of which suppose the purchaser to be a proprietor of Stock which he desires to transform from a perpetual annuity into one depending on life; power is given, however, to the Commissioners for the Reduction of the National Debt to receive cash equivalent in value, at the market price of the day, to the Stock required.

The "Stock Transferred" and "Money Paid" are shewn

separately, the latter being generally greater in amount than the former; but the sum paid for annuities purchased under the acts 16 & 17 Vic. c. 45, and 27 & 28 Vic. c. 43, commonly called Savings Bank Life Annuities, is included in the amount under the latter heading.

The deferred annuities have been, since the passing of the act 27 & 28 Vic. c. 46, carried to a separate account.

The Amount of Stock Transferred, and Money Paid, to the Commis-
sioners for the Reduction of the National Debt, for Life Annuities
under the Acts 10 *Geo.* 4, *c.* 24, 16 & 17 *Vic. c.* 45, *and* 27 & 28
Vic. c. 43; *and the amount of Annuities granted for the same during*
the undermentioned periods.

Year (ending 5th January).	Stock transferred to Commissioners.	Money paid to Commissioners.	Immediate Annuity granted.	Deferred Annuity granted.
	£	£	£	£
1853–54	266,886	450,360	60,643	1411
1854–55	190,502	344,625	46,903	1028
1855–56	243,441	319,984	48,326	1111
1856–57	277,018	361,741	56,591	1300
1857–58	272,533	323,258	54,564	1135
1858–59	341,418	467,234	69,416	811
1859–60	375,535	346,604	61,967	907
1860–61	271,004	398,450	59 874	1137
1861–62	250,571	350,007	54,557	1278
1862–63	278,155	390,501	58,124	644
1863–64	308,742	325,017	56,113	863
1864–65	181,144	227,758	36,846	551
1865–66	347,053	323,918	64,601	90
1866–67	222,439	268,772	43,403	16
1867–68	311,787	363,674	59,630	..

The Amount of Life Annuities, granted under the above Acts, chargeable
on the Consolidated Fund at 31*st March in each of the undermen-*
tioned years.

At 31st March.	Annuity chargeable.	At 31st March.	Annuity chargeable.
	£		£
1855	1,036,978	1862	1,025,707
1856	1,031,122	1863	1,017,669
1857	1,030,856	1864	1,008,543
1858	1,035,271	1865	983,941
1859	1,050,945	1866	990,727
1860	1,053,418	1867	973,519
1861	1,032,959	1868	973,548

We are indebted to Mr. Finlaison for the above particulars, which will we think be interesting to several of our readers. Probably it is not generally known that about £1,000,000 of the

public revenue is disbursed every year in the form of life annuities; and that about £600,000 on the average is annually invested in that mode with the Government. The amount of these investments fluctuates considerably; and curiously enough the fluctuations are a very fair index of the state of the money market at the time. Thus, in the 15 years under review, it will be observed that the greatest amount of annuities was granted in 1858, the year immediately succeeding the suspension of the Bank Charter Act in November 1857; and the least in 1864, a period of reckless speculation, the reaction from which is clearly discernible in the largely increased transactions of the following year.

German Life Assurance Institute.

IN accordance with the announcement we made in our last Number, we now extract from the proceedings of the German Life Assurance Institute the two following papers.—ED. *J. I. A.*

I.—*4th Feb.* 1868. DR. ZILLMER *on the Arithmometer, or calculating machine invented by M. Thomas (of Colmar).*

Ever since men began to compute, endeavours have been made to facilitate calculations, or to perform them altogether, by means of mechanical contrivances. The history of these would afford to its author abundant and interesting materials. The hands and fingers offer the first and readiest help in computing. We can not only count on the fingers, but even perform complicated calculations. Take the following as an example: If we call the little finger of each hand 6, the next one 7 &c.; we may in a simple manner reduce the multiplication of two numbers between 6 and 10 inclusive, to the multiplication of two numbers under 5, (the multiplication by 10 being assumed). If we have to multiply two numbers 7 and 8 for example, we must hold the finger 7 of one hand against the finger 8 of the other, count the fingers which are held together and all those below them on both hands, and multiply the number by 10; then count for each hand separately the fingers above those which are held together, multiply these numbers together, and finally add the two products. In the above example, the number of the fingers which are held together and of those under them, is 5; and the number of the fingers above them, is on one hand 2, and on the other 3, from which it follows that

$$7 \times 8 = 5 \times 10 + (2 \times 3) = 56.*$$

Coming now to Thomas's calculating machine,† we shall see that it can perform the first four rules of arithmetic with any numbers we choose,

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* The proof of the general truth of this rule is very easily deduced from the formula:
$$ab = (a + b - 10)10 + (10 - a)(10 - b).$$

† For its construction see the ingenious treatise "Die Thomas'sche Rechen-maschine, von F. Reuleaux, Freiberg 1862,"